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William E. Hickman
Date: October 8, 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

Regarding the application of:)	
)	
GERRIT KONIJN)	
)	
Serial No. 10/779,988)	Group Art Unit: 1724
)	
Filed February 17, 2004)	Examiner: Charles S. Bushey
)	
SEPARATION TRAY)	October 8, 2007
)	

COMMISSIONER FOR PATENTS
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

REVISED APPEAL BRIEF

This revised appeal brief is in response to the notice of non-compliant appeal brief mailed September 12, 2007. Please charge the \$500 fee for this brief, any necessary extension fees, and any other required fees to Shell Oil Company Deposit Account No. 19-1800.

Real Party in Interest

The Real Party in Interest in this appeal is the Assignee, Shell Oil Company. The inventor assigned the application to Shell Oil Company, by an assignment recorded June 14, 2004, and recorded at Reel 015455 and Frame 0071.

Related Appeals and Interferences

There are no known related appeals or interferences.

Status of Claims

Claims 1 through 14 were originally presented for examination.

Claims 1 through 14 were amended by an office action response mailed August 3, 2006.

Claims 1 and 3 through 14 were again amended, and Claim 2 canceled by an office action response mailed December 19, 2006.

Claims 1 and 3 through 14 were finally rejected by the Office Action mailed February 22, 2007, as being unpatentable over one or more of Artemov, DE 38 32 420; Schuurmans, EP 0 048 508; and Sheinman, US 5,626,799.

Applicants filed a Notice of Appeal and Pre-Appeal Brief Request for Review on June 1, 2007.

The Panel Decision from Pre-Appeal Brief Review was mailed June 19, 2007. The decision was to proceed to the Board of Patent Appeals and Interferences.

The claim which is under consideration in this appeal is claim 1, as amended by an office action response mailed December 19, 2006, and as shown in the Appendix hereto.

Status of Amendments

No amendments have been filed subsequent to the final rejection of February 22, 2007.

Summary of Claimed Subject Matter

The claimed invention is: a separation tray suitable for being horizontally mounted in a normally vertical column (Page 8, Lines 18-23, and Figure 1, Reference 1), which separation tray (Page 8, Lines 18-23, and Figure 1, Reference 2) comprises a normally horizontal upper wall (Page 8, Lines 24-33, and Figure 1, Reference 4) and a normally horizontal lower wall (Page 8, Lines 24-33, and Figure 1, Reference 6) defining an inner space (Page 8, Lines 24-33, and Figure 1, Reference 8) between them; a means (Page 8, Lines 24-33, and Figure 1, References 10a, 10b, 10c) for admitting fluid to the inner space (Page 8, Lines 24-33, and Figure 1, Reference 8); a means (Page 8, Lines 24-33, and Figure 1, Reference 15) for removing liquid from the inner space (Page 8, Lines 24-33, and Figure 1, Reference 8); a means (Page 8, Lines 24-33, and Figure 1, References 20a, 20b, 20c, 21a, 21b, 21c, and 22) for removing gas from the inner space (Page 8, Lines 24-33, and Figure 1, Reference 8); a plurality of primary separation devices (Page 9, Lines 1-11, and Figure 1, References 25a, 25b, 25c) within the inner space (Page 8, Lines 24-33, and Figure 1, Reference 8), for separating fluid into primary gas and liquid-enriched fluid, which primary separation devices comprise:

a normally vertical tubular conduit (Page 9, Lines 12-22, and Figure 1, Reference 28a) having at its lower end an inlet (Page 9, Lines 12-22, and Figure 1, Reference 30a) for fluid, which inlet is in fluid communication with the means (Page 9, Lines 12-22, and Figure 1, Reference 10a) for admitting fluid, and having at its upper end an outlet (Page 9, Lines 12-22, and Figure 1, Reference 32a) for primary gas, from which outlet an outlet conduit (Page 9, Lines 12-22, and Figure 1, Reference 34a) extends to a primary gas outlet opening (Page 9, Lines 12-22, and Figure 1, Reference 20a) in the upper wall (Page 8, Lines 24-33, and Figure 1, Reference 4), which primary gas outlet opening (Page 9, Lines 12-22, and Figure 1, Reference 20a) forms part of the means for removing gas;

a swirl-imparting means (Page 9, Lines 23-29, and Figure 1, Reference 36a) arranged in the conduit (Page 9, Lines 23-29, and Figure 1, Reference 28a) between the inlet for fluid (Page 9, Lines 12-22, and Figure 1, Reference 30a) and the outlet for primary gas (Page 9, Lines 12-22, and Figure 1, Reference 32a), so as to cause, during normal operation, the formation of a layer of liquid-enriched fluid in an annular region (Page 9, Lines 23-29, and Figure 1, Reference 37a) adjacent the inner surface of the conduit downstream of the swirl-imparting means, which liquid-enriched fluid comprises secondary gas;

and which separation tray further comprises a means (Page 10, Lines 3-24, and Figure 1, Reference 45a) for removing and guiding liquid-enriched fluid from each of the primary separation devices (Page 10, Lines 3-24, and Figure 1, Reference 25a) to a secondary separation means (Page 10, Lines 3-24, and Figure 1, Reference 52a) for removing entrained liquid from secondary gas,

wherein the secondary separation means (Page 10, Lines 3-24, and Figure 1, Reference 52a) for removing entrained liquid from secondary gas is formed by the free inner space (Page 10, Lines 3-24, and Figure 1, Reference 55) between the upper (Page 10, Lines 3-24, and Figure 1, Reference 4) and lower (Page 10, Lines 3-24, and Figure 1, Reference 6) walls, which free inner space (Page 10, Lines 3-24, and Figure 1, Reference 55) has in its lower part an outlet for liquid in fluid communication with the means (Page 8, Lines 24-33, and Figure 1, Reference 15) for removing liquid and in its upper part an outlet for secondary gas, which extends to a secondary gas outlet opening (Page 8, Lines 24-33, and Figure 1, Reference 21a) in the upper wall, which secondary gas outlet opening (Page 8, Lines 24-33, and Figure 1, Reference 21a) is separate from the primary gas outlet opening (Page 9, Lines 12-22, and Figure 1, Reference 32a) and forms part of the means for removing gas, and wherein the means for removing and guiding liquid-enriched fluid (Page 10, Lines 3-24, and Figure 1, Reference 45a) surrounds each primary separation device (Page 10, Lines 3-24, and Figure 1, Reference 25a) and is arranged to admit all

liquid-enriched fluid downwardly into the free inner space (Page 10, Lines 3-24, and Figure 1, Reference 55);

wherein the means for removing and guiding liquid-enriched fluid (Page 10, Lines 3-24, and Figure 1, Reference 45a) is arranged to admit all of the liquid-enriched fluid to the free inner space (Page 10, Lines 3-24, and Figure 1, Reference 55) at a position within 30% of the spacing between upper (Page 10, Lines 3-24, and Figure 1, Reference 4) and lower (Page 10, Lines 3-24, and Figure 1, Reference 6) walls, counted from the lower wall (Page 10, Lines 3-24, and Figure 1, Reference 6).

In other words, the return skirt (Page 10, Lines 3-24, and Figure 1, Reference 45a) provides an elongated path for gas entrained with fluids. The swirl imparting means (Page 10, Lines 3-24, and Figure 1, Reference 25a) forces the gas/fluid mixture outwards, through openings (Page 10, Lines 3-24, and Figure 1, Reference 40a) or up through annular opening (Page 10, Lines 3-24, and Figure 1, Reference 48a), down through return skirt (Page 10, Lines 3-24, and Figure 1, Reference 45a), and then back up free space (Page 10, Lines 3-24, and Figure 1, Reference 55) towards gas outlet (Page 8, Lines 24-33, and Figure 1, Reference 21a). This elongated path provides increased travel time and allows additional opportunities for fluid to separate from the gas.

Grounds of Rejection to be Reviewed on Appeal

As stated in the Final Rejection of February 22, 2007, claim 1 was rejected as being unpatentable over Artemov, DE 3,832,420. The Examiner stated that Artemov teaches all of applicant's invention except for the bottom of the return skirt being within 30% of the upper and lower walls, counted from the lower wall. The Examiner stated that Artemov suggests a spacing of about 3/8 or 37.5%, and that it would have been obvious for an artisan to modify Artemov to achieve Applicant's invention. (Office Action mailed February 22, 2007). Appellants hereby appeal this rejection.

Argument - The Rejection of Claim 1

Artemov teaches wet gas 2 entering vanes 11 and into lower tube 8. Dry gas 4 goes into upper tube 9, with wet gas going through space 10, and into "offene Kappe" 14 (translated as open cap 14), then into separation chamber 3. Liquids go to liquid outlet 5 at the bottom, with dry gas going to orifice 13 at the top. (Artemov, Figure 1 and Col. 1, Lines 14-49).

Artemov does not teach or suggest the desirability of open cap 14 extending to a position within 30% of the spacing between upper and lower walls, counted from the lower wall.

Artemov's open cap 14 is located at the mid-space between upper perforated plate 7 and lower perforated plate 6.

Applicant respectfully submits that the advantage of the invention in Claim 1 over Artemov may include one or more of the following: liquid can not reach the secondary gas outlets on a direct trajectory, maximized use of free inner space, increased time available for separation of entrained liquid, and/or longer travel distance for secondary gas. These and other advantages are discussed in paragraphs 21 and 22 of Applicant's Patent Application Publication.

In order for the Examiner to establish a prima facie case of obviousness, he must establish a motivation or suggestion to modify or combine the references, a reasonable expectation of success, and the claimed combination and reasonable expectation of success must be found in the prior art. (MPEP §2142).

Here the Examiner stated that Artemov's open cap 14 is located at 37.5% of the spacing between the upper and lower walls counted from the lower wall. Then the Examiner stated that the length of a return skirt is a well known parameter to those skilled in the art and can be modified according to the desired results. Applicant respectfully requests that the Examiner support his personal knowledge of the state of the art with an affidavit pursuant to 37 CFR 1.104(d)(2).

In addition, Artemov does not teach or suggest any return skirt length, nor a range which could be modified by one of skill in the art.

The Examiner has failed to establish a prima facie case of obviousness as there is no motivation or suggestion to modify the open cap 14 of Artemov into a return skirt ending at a position within 30% of the spacing between upper and lower walls, counted from the lower wall, there is no reasonable expectation of success, and the range within 30% is not taught or suggested by Artemov.

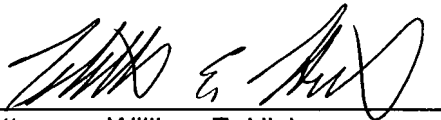
Applicant respectfully submits that Claim 1 is patentable over Artemov for at least the reasons stated above.

Appellant requests that the rejection of claim 1 be overturned.

CONCLUSION

The Appellants assert that the arguments presented above overcome the rejections of claim 1.

Respectfully submitted,
GERRIT KONIJN

By 
Attorney, William E. Hickman
Reg. No. 46,771
(713) 241-6082

P. O. Box 2463
Houston, Texas 77252-2463

CLAIMS APPENDIX

Listing of Claims:

1. (Previously presented) A separation tray suitable for being horizontally mounted in a normally vertical column, which separation tray comprises a normally horizontal upper wall and a normally horizontal lower wall defining an inner space between them; a means for admitting fluid to the inner space; a means for removing liquid from the inner space; a means for removing gas from the inner space; a plurality of primary separation devices within the inner space, for separating fluid into primary gas and liquid-enriched fluid, which primary separation devices comprise:

a normally vertical tubular conduit having at its lower end an inlet for fluid, which inlet is in fluid communication with the means for admitting fluid, and having at its upper end an outlet for primary gas, from which outlet an outlet conduit extends to a primary gas outlet opening in the upper wall, which primary gas outlet opening forms part of the means for removing gas;

a swirl-imparting means arranged in the conduit between the inlet for fluid and the outlet for primary gas, so as to cause, during normal operation, the formation of a layer of liquid-enriched fluid in an annular region adjacent the inner surface of the conduit downstream of the swirl-imparting means, which liquid-enriched fluid comprises secondary gas;

and which separation tray further comprises a means for removing and guiding liquid-enriched fluid from each of the primary separation devices to a secondary separation means for removing entrained liquid from secondary gas,

wherein the secondary separation means for removing entrained liquid from secondary gas is formed by the free inner space between the upper and lower walls, which free inner space has in its lower part an outlet for liquid in fluid communication with the means for removing liquid and in its upper part an outlet for secondary gas, which extends to a secondary gas outlet opening in the upper wall, which secondary gas outlet opening is separate from the primary gas outlet opening and forms part of the means for removing gas, and wherein the means for removing and guiding liquid-enriched fluid surrounds each primary separation device and is arranged to admit all liquid-enriched fluid downwardly into the free inner space;

wherein the means for removing and guiding liquid-enriched fluid is arranged to admit all of the liquid-enriched fluid to the free inner space at a position within 30% of the spacing between upper and lower walls, counted from the lower wall.

2. (Canceled)

3. (Previously presented) The separation tray according to claim 1, wherein an inlet of the means for removing and guiding liquid is formed by at least one opening in the wall of the tubular conduit of the primary separation devices, downstream of the swirl-imparting means, and wherein the means for removing and guiding liquid-enriched fluid comprises a return skirt arranged externally over the upper part of the conduit.

4. (Previously presented) The separation tray according to claim 3, wherein a further inlet of the means for removing and guiding liquid-enriched fluid is formed by an annular opening between the upper end of the tubular conduit and the return skirt.

5. (Previously presented) The separation tray according to claim 1, wherein the means for removing and guiding liquid-enriched fluid has an inlet at the upper end of the conduit of the primary separation devices, and is arranged to admit the liquid-enriched fluid into the free inner space at a position closer to the lower wall by at least 10% of the length of the conduit, counted from the inlet at the upper end of the conduit.

6. (Original) The separation tray according to claim 5, wherein the means for removing and guiding liquid-enriched fluid is formed by a return skirt that is formed integrally with the upper wall.

7. (Original) The separation tray according to claim 6, wherein separate outlets for primary and secondary gas are arranged in the upper wall.

8. (Original) The separation means according to claim 7 and provided with a return skirt, wherein the return skirt is annularly U-shaped.

9. (Original) The separation tray according to claim 8, wherein the swirl-imparting means is formed from a metal plate by providing the metal plate with slits so as to define segments, followed by bending the segments out of the plane of the metal plate.

10. (Original) The separation tray according to claim 9, wherein the each segment has the form of a circle sector, and is bent around a radius out of the plane of the metal plate.

11. (Original) The separation tray according to claim 10, wherein the slits are provided by means of laser cutting.

12. (Original) The separation tray according to claim 11, wherein the swirl imparting means is integrally formed with the bottom wall.

13. (Original) The separation tray according to claim 12, wherein a plurality of primary separation devices is arranged on the corners of a regular grid, in particular a grid formed by quadratic cells or equilateral triangular cells.

14. (Original) The separation tray according to claim 13, when mounted in a column.

EVIDENCE APPENDIX

There is no additional evidence relied upon by the Appellant in the Appeal.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings. This Appendix is not applicable.